Learning Language: A Mathematics Educator's Reflection on Empathy and Privilege

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Abstract

Some educators who are not English language learners (ELLs) do not fully appreciate the struggles and resources ELLs have. This paper, expanded from a reflection in the Spring 2013 newsletter of the North American Study Group on Ethnomathematics (NASGEm), shares a journey of cultivating empathy -- from personal perspective to professional development.

Discussion And Reflection Enhancement (DARE) Pre-Reading Questions

1. Is learning how to teach ELLs the responsibility of everyone or just specialists?
2. Have you been in a situation where you had to navigate a different language or culture? How did that feel and what strategies did you use?
3. Are you a member of a minority, non-mainstream, underrepresented, or non-dominant group?
4. If your answer to #3 is yes, how has this made you appreciate the distinctive struggles and resources of those in other such groups?

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Because I do not identify myself as an ELL (though I definitely keep learning more about the English language!), I am occasionally asked why I have made diversity and ELL issues a major part of my recent scholarship (e.g., Lesser, 2010, 2014; Lesser, Wagler, Esquinca, & Valenzuela, 2013; Lesser & Winsor, 2009; Lesser, 2010; Wagler & Lesser, 2011) and professional service. Part of my answer involves how ELL issues are becoming increasingly prominent, with the percentage of ELLs in U.S. K-12 schools projected to increase by 2030 to 25% (Goldenberg, 2008) or even 40% (Herrera & Murry, 2005). And because so much of the social order depends on having an educated public, I believe it is in everyone's interest to support education for all students, whether or not one is an ELL, whether or not one has a child in public school, etc.

Another part of my answer involves connections with the access-and-excellence mission of my university, which serves a regional population with a substantial fraction of ELLs. A further part of my answer is more personal: the values of my faith tradition (e.g., Jacobs, 2012; Schwarz, 2006) to "remember the stranger" and to be sensitive to the experiences of any minority group who lacks or has lacked equal opportunities for access in society. In this paper, I reflect on how my empathy for ELLs has inspired me to identify and implement strategies that may be effective in helping others cultivate empathy as well.

Making My Own Connections

Language and culture dynamics gained personal immediacy for me when I (as a not highly knowledgeable Jew) married into a Modern Orthodox Jewish family. This life change blessed me with a richness of meaningful experiences, though the denominational culture presented a much higher density and speed of Hebrew language and shorthand. My struggle to follow what was happening or said during times I did not recognize words or phrases gave me tangible empathy for the experience of students who are ELLs and what a difference support can make.

For example, a traditional Talmud class might use a text that lacked not only English translation but also markings for punctuation or vowels. A more accessible Talmud class might use a book (e.g., Shefa Foundation, 2012) which unpacks what is a very dense text by, for example, not only translating into English but also filling in referents and phrases that are often implied but unstated in the terse original Hebrew text.

I was also quite grateful when I found linguistic support at religious services. Some Orthodox synagogues regularly announce or display page numbers. Many congregations serve worshippers of varying Hebrew fluency by keeping on hand prayerbooks that include English translations at the paragraph level, linear (line by line), or even interlinear. An interlinear approach (e.g., Apisdorf, 2002) translates 1-3 words at a time, giving me the opportunity to understand the meaning of what I was pronouncing word by word, and incrementally build my vocabulary. ELLs in my mathematics content and pedagogy courses are usually quite appreciative when I make them aware of mathematics glossaries (e.g., COMAP, 2004), terms handbooks (e.g., COMAP, 2008; Dragt, 2009, Velázquez Press, 2010), or applets (e.g., http://nlvm.usu.edu/es/nav/ and http://www.eduteka.org/MI/master/interactivate/) that include their dominant language. And because I recall what it feels like to struggle to recover from temporarily falling behind or losing my place in a service or class, I try to incorporate periodic organizers, callbacks, and recaps into my teaching so that students can readily navigate or rejoin the flow of instruction even if there was something earlier that they did not understand.

Because I already knew how to pronounce Hebrew (aided by the fact that each letter is always pronounced the same way – like Spanish, but unlike English!), people sometimes overestimated my Hebrew vocabulary. Regularly reading the same passages from a prayerbook requires much less proficiency than, say, reading a Hebrew newspaper sans vowels. Later, I recognized the rough parallel that I had surely overestimated the academic language proficiency of many ELLs based on observing their solid proficiency with everyday English outside of formal academic discourse. Indeed, everyday language proficiency typically precedes academic language proficiency by several years (Cummins, 1992; Johnson, 2010).

A particular way my Hebrew proficiency has been overestimated is when someone with the well-meaning intention to make me feel included gives me the honor of publicly leading a Hebrew prayer that I lack the proficiency to read smoothly. Those awkward experiences have helped me remember to make sure that what I ask of ELLs in class is sufficiently scaffolded (e.g., using techniques such as sentence frames for students to complete: "a z-score is the number of ___ that a value is above the ____"; see Wagler & Lesser, 2011) so that they can keep their main focus on the content, not feel put on the spot, and feel that they belong to and can contribute to our classroom community. Another example is that a student asked when the mean could exceed the median may not be able to generate a phrase such as "a unimodal, right-skewed distribution", but I could allow them to use informal language or draw the shape to show me they understand the concept (Lesser & Winsor, 2009).

While there are many lexicons of Jewish terms (e.g., Eisenberg, 2008; Eisenberg & Scolnic, 2006; Olitzky & Isaacs, 1992), some researchers have gone further to include more comprehensive analysis and resources (e.g., Benor 2009, 2012; Weiser, 1995) that decode the distinctive cultural and linguistic patterns used by native-born Americans who are Orthodox Jews. In addition to rabbinic Hebrew words and phrases (e.g., *yotzei*, *assur*, etc.) often inserted in otherwise "regular English" constructions, this also includes Yiddish-influenced idiomatic use of English words, even a word as common as "by". Benor (2009) gives examples of the latter such as "Are you eating by [at the house of] Rabbi Fischer?" and "If you hold by [accept, believe in] Reb Aron.…" This made me more sensitive to the idea that my students could assume they knew each word of a phrase used in mathematics or statistics class (e.g., "in the long run", "expected value", "at least six") but yet not understand the particular way the phrase is being used as an intact whole. When such phrases come up, I make it a point to discuss with the class how the phrase works as an entity, rather than as the sum of its parts.

Ultimately, I had to navigate culture (Benor, 2012; Langman, 1999; Oppenheimer, 2013) as well as language. Knowing the content of the weekly Torah portion does not ensure a Jew can turn it into a short talk (*d'var Torah*) that will be effective for a particular audience. Likewise, knowing mathematics content does not guarantee an ELL understands the conventions of giving an academic or class presentation. In both cases, one has to know when to cite sources, when to make or avoid connections to personal perspectives or conjectures, when to use informal versus formal language, etc. There are also parallels in terms of whether one's identity as a newcomer (whether to the English language or to traditional Judaism) is permanent or is shed when one's knowledge or experience reaches a certain level, and how much one is able or wanting to keep the newcomer identity invisible (Benor, 2012). And in general, having now experienced Jewish congregations in almost every denomination, I better appreciate how ELLs (or Latinos, etc.) are likewise not a monolithic group and I try to avoid stereotypes (Lesser, 2014) or one-size-fits-all approaches.

Challenging in a different way is having one's capabilities *underestimated*. I have had people assume I could not handle more conceptually-rich discussions of Jewish text or ideas based on an assumption quickly formed from how I imperfectly used language or convention. This helps me remember that students can understand more of a language (including mathematics) than they can generate and not to assume that someone is incapable of higher-order thinking in mathematics just because they may struggle to express their understanding in academic English. More generally, this helps me remember to avoid the pitfalls of deficit models, and know that each person has knowledge and experiences in her/his background that can be a valuable resource (e.g., Khisty, 1997). Lesser et al. (2013) give examples of words (edifice, facile, felicity, pensive, confounded) that a Spanish-speaking ELL may be more likely than a native English speaker to recognize (e.g., because of cognates) certain English words or to relate better to the context of certain mathematics problems. And though I have been using the term ELL, I now better appreciate why some (e.g., Phakeng & Moschkovich, 2013) prefer the term "bilingual" because it emphasizes a resource rather than a deficit. In the case of an Orthodox Jewish study setting, I frequently am (or at least feel like) one of the few in the room whose education does not include Jewish day school or *yeshiva*, but I sometimes surprise people by how much I can nevertheless participate or contribute, drawing from my overall strength in logic and reasoning (thanks to degrees in mathematics and statistics), my university coursework in philosophy (including philosophy of religion), and my having studied connections (e.g., Lesser, 2006, 2013) between Judaism and my secular field of expertise.

Privilege

Like many people with much privilege (e.g., I am a member of society's historically privileged groups in terms of gender, gender identity, sexual orientation, and skin color, and was born in the U.S. to well-educated parents in the upper middle class), I found my privilege largely invisible to me until I finally found myself in contexts where I lacked it. I found it helpful to draw from positive and negative experiences as a religious minority (not to mention having non-native status within a minority subgroup of my minority religion!) to help sensitize myself more fully to the experiences of my university's students, whose modal ethnicity, gender, and religion differ from mine. My "privilege checklist" score (McIntosh, 1989) is certainly lower (though not as low as it would be if I were a person of color) when I view myself as a visibly-identified committed Jew compared to when I view myself more generically as a White person (e.g., Diamant, 2013; Killermann, 2012; Marcus, 2014). This nuanced concept of how one can be privileged in some ways and not in others is called *intersectionality*.

McIntosh's framework of unearned privilege can also be used to articulate *linguistic privilege* – an unearned asset I received simply because I happened to spend my best language-learning years (before I was old enough to make decisions about where I would live or attend school) in an environment where the dominant language is the one most widely used in documents, signs, websites, curriculum, commerce, research journals and conferences, international organizations, etc. I am now humbly aware how much I had taken for granted that I could understand virtually everything my teachers (or a standardized test) said, that my ability to communicate or interview for a job would not be hindered by an accent, that my use of my native language in school would not be held against me, etc. I now see that I also took for granted that the symbols and algorithms I learned in American elementary schools to do arithmetic were viewed as standard, even though the alternatives students in some other countries learn are equally mathemati-

cally valid (Moschkovich, 2013). Rather than let awareness of this privilege paralyze me with embarrassment or guilt, I have let it energize me to make my classroom a more level playing field and to seek effective gentle ways to raise the consciousness of other educators as well.

Motivating other Educators

Using a Different Language

Many educators have found that empathy for ELLs in the US can be cultivated with experiences such as a study abroad program (Marx & Pray, 2011) or sustained field experiences (e.g., Luft, 1999). Because most in-service or pre-service teachers may not have the opportunity, time, or money for such experiences, there is a need to identify opportunities of shorter duration that have a high bang-for-the-buck. Many educators speaking on ELL issues to broader audiences are finding it makes a memorable impact to open presentations by having the audience actively engage with some mathematics content in an unfamiliar language, to approximate an experience many ELL students have. For example, Asturias (2011) presented a PowerPoint slide with a mathematics word problem in Filipino (Tagalog) and invited participants to turn to their neighbors and try to solve the problem, or at least understand the question. Next, he showed a slide that simply added a picture. He then asked "How did it feel? Did you feel you had access to the problem?" Then he modeled strategies such as identifying cognates and then finally showed the problem in English.

Wagler, Lesser, Monárrez, and Salazar (2012) opened their presentation to statistics educators with some experiential examples for attendees. First, attendees were given a minute to try to understand what they could of a six-sentence excerpt (in German) from Sorto, White, and Lesser (2012), a translation of Sorto, White, and Lesser (2011). The excerpt (see Figure 1), reprinted here with permission, consists of a description (in German) of two tasks accompanied by a scatterplot with axes labeled in English, and the second of those tasks appears in Figure 1 below. Cognates were identified such as Kriterium (criterion), Studenten (students), Graphen (graphs), beste (best), and Daten (data). Attendees experienced how much or how little this enabled them to feel like they understood the entire excerpt, especially given that some words were false cognates, such as könnten meaning "compute," not "contain."

Aufgabe 2: Welches Kriterium haben Sie benutzt, um die Gerade festzulegen? Beschreiben Sie, was Sie gedacht haben, als Sie eine passende Gerade ausgewählt haben.

Aufgabe 3: Zwei Studenten haben unabhängig voneinander die ihrer Meinung nach beste Gerade gezeichnet. Die Graphen in Abbildung 2 zeigen ihre Geraden. Wenn Sie zu entscheiden hätten, welche der beiden Geraden besser zu den Daten passt, was wäre dann Ihre Wahl? Gibt es irgendetwas in diesem Zusammenhang, was Sie ausrechnen könnten?

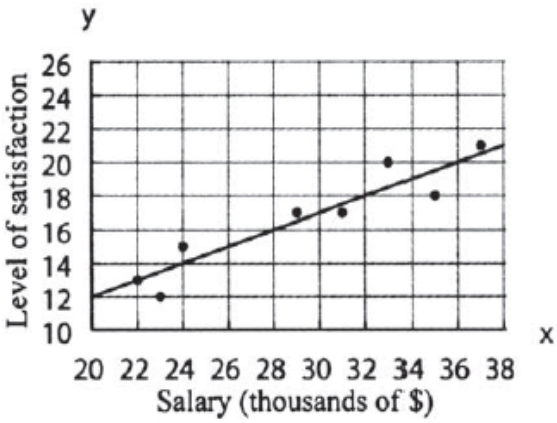

Figure 1. A description in German of two tasks accompanied by a scatterplot with axes labeled in English.

The impact of such demonstrations is arguably even greater when the chosen language does not use letters from the English alphabet. Washburn (2008) and Anhalt, Ondrus and Horak (2007) discuss the impact of an unannounced guest teacher giving a mathematics lesson in Chinese to pre-service teachers and middle school in-service teachers, respectively. In the post-lesson debriefing, students reported feeling confused, frustrated, lost, stupid, and overwhelmed during the lesson, even though they knew there were no consequences for not understanding. As a way to get the best of both approaches, bilingual educators (e.g., Giron & del Campo, 2009) have found it powerful to present the same piece of content using languages that get progressively "closer to English" such as Japanese, Croatian, German, Spanish, English. An audience experiencing such a sequence can feel how their level of comprehension and comfort increases with the emergence of cognates and other cues. Kubota, Gardner, Patten, Thatcher-Fettig, and Yoshida (2000) describe how a shock language experience (a 20-minute language arts lesson in Japanese, followed by debriefing in English) geared to ELLs' mainstream peers in elementary school affirmed diversity and encouraged peer collaboration.

Finally, the second language can also simply be the quirky language of an unfamiliar context. A recent example of this is Vomvoridi-Ivanović and Razfar (2013), who describe an innovative use of baseball to help pre-service teachers who are fluent in English but not in baseball gain empathy for students who are ELLs.

Filling in the Blanks

Another type of experiential example involves taking an excerpt from an English-language mathematics textbook, but with blanks inserted for each word that is not a "K1 word" (K1 words are words from the 1000 most commonly-used English word families; see West, 1953), adapting the idea of Nation (1990) cited at http://www.lextutor.ca/research/rationale.htm and perhaps viewable as a modified Cloze test (e.g., Gellert & Elbro, 2013). Rather than asking students to imagine being a second language learner themselves (as in the preceding examples), this approach asks students to imagine what an ELL in their class right now might experience. To illustrate, consider this not atypical exercise from a mainstream published statistics textbook (Larson & Farber, 2003, p. 387), which has been modified by replacing words that are not from K1 or K2 word families (i.e., words from the 2000 most commonly-used word families) by numbers in parentheses:

"A (1) (2) association believes that the mean (3) of fresh (1) fruits by people in the U.S. is at least 94 pounds per year. A (4) sample of 103 people in the U.S. has a mean (3) of fresh (1) fruits of 93.5 pounds per year and a standard (5) of 30 pounds. At $\alpha = 0.02$, can you (6) the association's claim that the mean (3) of fresh (1) fruits by people in the U.S. is at least 94 pounds per year?"

After reflecting on how comprehensible the above exercise was, reflect upon that same exercise below with the six distinct non-K1 or non-K2 words filled in using boldface and underline to denote words that are AWL (Academic Word List; see Coxhead, 2000) or Off-list words (i.e., not K1, K2, or AWL), respectively:

"A citrus grower association believes that the mean **consumption** of fresh citrus fruits by people in the U.S. is at least 94 pounds per year. A **random** sample of 103 people in the U.S. has a mean **consumption** of fresh citrus fruits of 93.5 pounds per year and a standard **deviation** of 30 pounds. At $\alpha = 0.02$, can you **reject** the association's claim that the mean **consumption** of fresh citrus fruits by people in the U.S. is at least 94 pounds per year?"

Note that this exercise includes two two-word phrases ("standard deviation" and "random sample") in which one word is "common" and the other is an AWL word, a situation which may make it difficult for a student to remember to treat the phrase as a single entity. Also challenging is the phrase "at least" (Nolan, 2002), which a student (especially an ELL) may use a "key word" approach (e.g., Clement & Bernhard, 2005) to operationalize "at least" incorrectly as "less than." Other issues are created by the fact that the words "mean" and "association" each are K1 words that can also be used as statistics terms, but in this particular exercise, "mean" is used as a statistical term (i.e., average), while "association" is not (i.e., it uses the everyday meaning of "a group of people" rather than statistical correlation). Finally, we note that the off-list words ("citrus" and "grower") may make it difficult for students to feel they sufficiently understand the real-world context for the exercise. Here is a rewrite of the opening sentence that preserves the mathematics but stays completely within K1 (except for the K2 word "oranges"): "An organization of farmers who grow oranges believes that people in the U.S. eat a mean of at least 94 pounds of oranges per year." When I am unsure that my lecture notes, test problems, or worksheets have avoided unnecessarily complicated language, I simply paste the text into the LexTutor VocabProfile window (http://www.lextutor.ca/vp/eng/) or generate Readability Statistics, an option in MSWord (Wagler & Lesser, 2015).

Concluding Thoughts

By having had my own concrete experiences with navigating culture and language, I have increased awareness and understanding of some dynamics faced by my ELL students and have increased motivation to give other educators experiences that will evoke further empathy in them as well. As Howard (1999, p. 2) notes, "Diversity [of the students we teach] is not a choice, but our responses to it certainly are." More generally, I believe that cultivating empathy for this significant subgroup of my students has been humanizing and has increased my desire and ability to connect with other subgroups as well. And because language diversity can be (at least initially) invisible, it is a humble reminder how the students I teach may have still other hidden diversity that impacts how they experience content. Plank and Rohdieck (2007) give the example of two white women looking at unemployment data among military spouses, but having very different reactions because one is a military spouse herself and the other is gay "and thus [at the time] legally excluded from both marriage and the military."

Almost all of my students are preservice or inservice teachers, and they have (or certainly will have) ELLs among their students in this part of the country, and some of my students are (or have been) ELLs as well. This is not surprising because my university's population reflects the population of the Paso del Norte region and UTEP is the largest university (and the only doctoral research university) in the country with a majority Mexican-American student population. Therefore, even when I teach "content classes," I try to share support resources and model ELL-friendly best practices for instruction (e.g., Lesser, 2011), and empower all students to find their voice (Reyes, 2012). And so, I continue making transfer to my professional role as a mathematics educator from my own personal experiences as a minority. My journey of empathy is ongoing, continu-

ing to evolve over my lifetime. And empathy is a way to contribute to the healing process needed in our increasingly diverse society (Howard, 1999).

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Discussion And Reflection Enhancement (DARE) Post-Reading Questions

1. What are some reasons it is helpful for educators to cultivate empathy for ELLs?

2. What are some techniques or tools you might use or adapt to cultivate empathy for ELLs?

3. Of the examples generated by the preceding question, which is the most powerful for you? Why?

4. Taking into account ideas in Noddings (2010), discuss the concept of empathy and how it differs from sympathy.

5. See D'Ambrosio et al. (2013) for a conversation about positioning oneself (i.e., discussing one's frameworks, ideologies, identities, etc.) in one's mathematics education work. How does the current *TEEM* paper succeed -- or fall short -- in this?

"DARE to Reach ALL Students!"